

Work Order ID 60989

August 3, 2010 2:57:14 PM



Page 1

Item ID: D350-636-012

Accept



Setup Start



Revision ID:

Stop



Item Name: Skidtube RH

Start Date: 8/03/10 Start Qty: 1.00



Cust Item ID:

Required Date: 8/12/10 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

*H*Date: *10-8-03*

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

D2750

Rev F

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy blue file and type labels per PPP D350-636-012 CHG 005

*5/2/06/19**for CL 10/08/19*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Run Start

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

110

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1- Pick D2600-3 Bent

2- Deburr FWD and AFT ends, remove bending marks. Scribe batch# inside AFT end per dwg D2750

3- Drill pilot holes for blade fitting bolt holes using DT8983. Open to 0.500", deburr.

4- Locate DT8329 off of blade fitting bolt holes and drill pilot holes for blade fitting

5- Drill fwd step holes using DT9616. Ensure proper positioning.

6- Drill pilot holes as per Dwg D2750 sheet 4 (D2750-2 details). Drill using drill Jig DT8150 & DT8863A for first side only DT8863B for second side (detail B)
ONLY DRILL ONE SIDE OF FWD SADDLE HOLES USING DT81507- Clecko DT8863B on second side of tube and drill pilot holes for detail B.
SECOND SIDE

8- Clecko DT9642 and drill fwd saddle holes on second side, ensure proper positioning.

9-Open up holes for Detail B to 0.375" (4 holes per side) and blade fitting location holes to 0.500" (total of 4 holes per side) as per dwg D2750. Open up holes for ground handling and detail C to 0.500" (8 holes per side)

10-Drill pilot holes for wearplates as per Dwg D2750 using DT8108 open to

DP 10-8-4

Dart Aerospace Ltd

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Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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0.297".

11-Open up holes of Detail A to 0.297" (total of 2 holes per side)

12-Weld D2744 Cap as per Dwg D2750 and QSI 004.Fill grooves in bend left from bending as per QSI 004

A/R Aluminum Rod batch: ☐ M114247

13-Grind welds flush as per Dwg D2750

> DP 10-8-4

BE 10-08-05

BE 10/08/10

120



QC

Quality Control

QC10- Inspect visual per QSI004- ground welds

0.00

Memo

0.00

8/10/08/10

130



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

8/10/08/10

80

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Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140 HandFinish Hand Finishing	Chemical Conversion Coat per QSI005 4.1 Memo	0.00 0.00				(1X)	2	MB 10-08-10	
150 QC Quality Control	QC3- Inspect Part Finish Memo	0.00 0.00				(1X)		BE 10-08-11	

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Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

160

0.00



Skidtubes

Skidtubes

Memo

0.00

1-Open up holes of Detail L and ground handling to 0.625" (total of 8 holes per side) as per dwg D2750.

2-Open up holes of Detail K to 0.750" (total of 4 holes per side) as per dwg D2750.

3-Open float holes to .500" (4 per Side)

4-Chamfer holes of Detail K, L, ground handling and float holes per dwg D2750 (welding instructions on sheet 9)

5-Deburr and blow out all chips from inside of tube

6-Prepare tube for welding, remove alodine as required.

7-Bond web D2739 in place as per QSI 015

A/R ☐ Sikaflex-291batch: M115114 ☐ ☐
exp. date: 11-1-30

8- Weld spacers D3490-1, D3490-3 and D2743 as per dwg D2750 & QSI004 (welding instructions on sheet 9)

A/R ☐ Aluminum Rod batch: M114877

9- At section AP-AP drill out x-bolt spacer to 0.404"

10-Grind welds flush as per Dwg D2750

11-Spot face ground handling holes section (total of 4 places per side) as per

10-8-11

BR 10-8-12

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Customer:

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

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dwg D2750

12-Deburr holes

BE 10/08/12

0.00

8/10/08/12

0.00

170



QC

Memo

Quality Control

180



QC

QC5- Inspect part completeness to step on W/O

Memo

Quality Control

0.00

0.00

8/10/08/12

⑩

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Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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190



HandFinish

Pressure Wash per QSI005 4.3

0.00

Memo

0.00

Hand Finishing

Re-alodine tube as-per QSI 005 section 4.1.2.1 do not acid etch.

ml 10 08 16 ①

200



Powdercoat

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

Memo

0.00

Powder Coating

START TIME: 11:30am
OVEN TEMPERATURE: 320°F
FINISH TIME: 12:00pm

2) JVA 10/08/16 1 0

210



QC

QC3- Inspect Part Finish

0.00

Memo

0.00

Quality Control

Inspect for foreign object per QSI 024

ml 10 08 16 ①

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
220 	HandFinishing	0.00	=> M 10/08/16			x1	Ø		
HandFinish	Memo	0.00							
Hand Finishing	Install inserts as per dwg D2750								

230			0.00						
	HandFinishing			=> M	10/08/18	x1	Ø		
HandFinish		Memo	0.00						
Hand Finishing									

1-Inspect for Foreign Objects

2-Spray inside of tube with "LPS-3"
batch: N/A

3-Install blade fitting D3488-042, wearshoes and ground handling hardware as
per dwg D2750
SIKA FLEX 241
BATCH: 11119114
EXP DATE: 11101

4-assemble o-ring to plug as per dwg D3492 and apply o-ring lube
A/R 55-o-ring lube batch: 14114189

5-Coat all exposed fasteners with "LPS Procyon"
batch: 1443596

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00				<u>10</u>	<u>10</u>	<u>08</u>	<u>18</u> (1)
250 Packaging Packaging	Pick Kit Memo	0.00 0.00							<u>10/8/195</u>
260 QC Quality Control	QC4- 100% Inspect kits for completeness Memo	0.00 0.00							<u>(10)</u>

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270 	Packaging	0.00							
Packaging	Memo	0.00							
Packaging	Package as per PPP D350-636-012	72		Reo H					
280 	QC21- Final Inspection - Work Order Release	0.00							
QC	Memo	0.00							
Quality Control									

10/08/19

MF
10-8-19

W/O:		WORK ORDER CHANGES					
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Picklist Print

Page 1

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Parent Item Name: Skidtube RH



Start Date: 8/03/10

Required Date: 8/12/10

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev: I 02.09.25 Rearranged procedure steps KJ
 IPP Rev: J 06-03-29 As per Rev D EC
 IPP Rev: K 06-07-13 As per dsi9343 EC
 IPP Rev: L 07-07-28 Added SS Wearplates (Rev E) JLM Verified By: EC
 IPP Rev: M 08-04-22 update steps 4, 13 DD verified by: EC
 IPP Rev: N 08-09-23 revF as per dwg DD verified by: ec IPP Rev: O
 10.06.22 revise seq 110 DD verf: EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

ALS4-1032-225		Purchased	No			220	Each	5,957.000	38	38			
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Insert

Location	Loc Qty	Loc Code
PK011	5957	
110768	5957	

x38 M 10/08/16

AN3C5A		Purchased	No			230	Each	1,364.000	34	34			
--------	--	-----------	----	--	--	-----	------	-----------	----	----	--	--	--



Bolt

Location	Loc Qty	Loc Code
ST350	1354	
114330	11	
115015	743	
115108	300	
115316	300	
ST351	10	
113121	10	

x34 M 10/08/16

AN3C6A		Purchased	No			230	Each	425.0000	4	4			
--------	--	-----------	----	--	--	-----	------	----------	---	---	--	--	--



BOLT

Location	Loc Qty	Loc Code
ST351	425	
111982	425	

x4 M 10/08/16

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Start Date: 8/03/10

Required Date: 8/12/10

Start Qty: 1.00

Required Qty: 1.00

AN6C44A

Purchased

No

230

Each

177.0000

4

4



BOLT



Location

Loc Qty

Loc Code

FG

2

103964

2

ST344

175

111649

2

114653

1

114784

47

114941

75

115030

50

x4 M 10/08/10

AN8C35A

Purchased

No

230

Each

58.0000

1

1



BOLT



Location

Loc Qty

Loc Code

FP

1

110847

1

ST346

57

114442

27

115188

30

x1 M 10/08/10

AN960C10L

NAS1149C0332
R

Purchased

No

230

Each

29.0000

38

38



washer



Location

Loc Qty

Loc Code

ST245

29

107534

29

x38 M 10/08/10

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Start Qty: 1.00

Required Qty: 1.00

AN960C816L

Purchased

No

230

Each

23.0000

1

1



WASHER

Location

Loc Qty

Loc Code

ST348

23

110584

20

111424

3

XL M 10/08/10

D2745

Manufactured

No

230

Each

169.0000

8

8



Bushing

Location

Loc Qty

Loc Code

ST023

169

52311

5

59112

164

XL M 10/08/10

D3488-042

Manufactured

No

230

Each

17.0000

1

1



Blade Fitting Assembly, RH

Location

Loc Qty

Loc Code

FP008

17

53918

5

59643

12

XL M 10/08/10

D3492-041

Manufactured

No

230

Each

93.0000

8

8



Plug Assembly

Location

Loc Qty

Loc Code

FP013

93

59114

24

59420

69

XL M 10/08/10

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Start Qty: 1.00

Required Qty: 1.00

D3492-043

Manufactured No

230

Each

51.0000

8

8



Plug Assembly

Location

Loc Qty

Loc Code

FP

2

54682

2

FP013

49

59117

1

59190

4

59421

14

60712

30

XB 10/08/16

D3535-25

Manufactured No

230

Each

24.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FP18

24

59623

24

VI 10/08/16

D3536-25

Manufactured No

230

Each

29.0000

1

1



Gasket

Location

Loc Qty

Loc Code

FP12

29

58820

5

59625

24

VI 10/08/16

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Page 4

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 5

Work Order ID: 60989

Parent Item: D350-636-012

Parent Item Name: Skidtube RH

Start Date: 8/03/10

Required Date: 8/12/10

Start Qty: 1.00

Required Qty: 1.00

D3537-1

Manufactured No

230

Each

13.0000

3

3



Wearpad



Location

Loc Qty

Loc Code

FP

1

B60912

x3

Al 10/08/16

55465

1

FP17

12

57713

3

59593

9

D3631-1

Manufactured No

230

Each

571.0000

8

8



Washer



Location

Loc Qty

Loc Code

ST072

297

60755

297

x8

Al 10/08/16

ST076

274

52693

206

54388

68

D3672-1

Manufactured No

230

Each

1,011.000

4

4



Phenolic Washer



Location

Loc Qty

Loc Code

ST077

993

51674

5

52505

988

x4

Al 10/08/16

ST117

18

34470

18

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Page 5

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 6

Work Order ID: 60989

Parent Item: D350-636-012

Parent Item Name: Skidtube RH

Start Date: 8/03/10

Required Date: 8/12/10

Start Qty: 1.00

Required Qty: 1.00

D3791-1 Manufactured No 230 Each 20.0000 1 1



Wearplate

Location Loc Qty Loc Code

FP17 20

58573 11

59626 9

D3793-1 Manufactured No 230 Each 15.0000 1 1



Wearshoe

Location Loc Qty Loc Code

FP18 15

59151 2

59630 13

D3793-3 Manufactured No 230 Each 13.0000 1 1



Wearshoe

Location Loc Qty Loc Code

FP18 12

59631 12

FP19 1

57947 1

D3794-1 Manufactured No 230 Each 19.0000 1 1



Gasket

Location Loc Qty Loc Code

FP010 19

57942 18

59627 1

xt M 10/08/16

xt M 10/08/16

xt M 10/08/16

xt M 10/08/16

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Page 6

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Page 7

August 3, 2010 2:57:18 PM

Work Order ID: 60989

Parent Item: D350-636-012

Parent Item Name: Skidtube RH

Start Date: 8/03/10

Required Date: 8/12/10

Start Qty: 1.00

Required Qty: 1.00

D3794-3

Manufactured No

230

Each

24.0000

1

1



Gasket

Location

Loc Qty

Loc Code

FP10

12

60826

12

FP18

12

56066

11

59153

1

x1 24 10/08/16

MS21043-6

Purchased

No

230

Each

726.0000

4

4



NUT

Location

Loc Qty

Loc Code

ST301

726

112314

726

x4 24 10/08/16

MS21083C8

Purchased

No

230

Each

58.0000

1

1



NUT

Location

Loc Qty

Loc Code

ST303

58

113845

7

14934

51

x1 24 10/08/16

NAS1611-010

Purchased

No

230

Each

267.0000

8

8



O-RING

Location

Loc Qty

Loc Code

FP

267

110715

100

110915

167

PTO =)

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Page 7

Dart Aerospace Ltd

W/O: 60989		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
10/08/16	230	Replacc NAS 1611-010 "O" Rings with D2594-3 B59358 "O" Rings	JH	10/08/16	8		10/08/16

Part No: D350-636-012 PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

August 3, 2010 2:57:18 PM

Page 8

Work Order ID: 60989

Parent Item: D350-636-012

Parent Item Name: Skidtube RH

Start Date: 8/03/10

Required Date: 8/12/10

Start Qty: 1.00

Required Qty: 1.00

NAS1611-013

Purchased

No

230

Each

67.0000

8

8



O-RING

Location

Loc Qty

Loc Code

FP

67

114451

51

114496

16

Purchased

No

250

Each

59.0000

2

AN8C21A



BOLT

Location

Loc Qty

Loc Code

ST345

59

113558

19

114653

40

Purchased

No

250

Each

23.0000

1

AN960C816L



WASHER

Location

Loc Qty

Loc Code

ST348

23

110584

20

111424

3

Manufactured

No

250

Each

22.0000

1

D2741



Blade, 350 Skidtube

Location

Loc Qty

Loc Code

ST466

22

55905

2

57949

20

xl 10/08/118
xl 10/08/118
2
10/01/984

2
10/01/984

1
10/01/984

1

August 3, 2010 2:57:18 PM

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Page 8

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

August 3, 2010 2:57:18 PM

Work Order ID: 60989

Parent Item: D350-636-012

Parent Item Name: Skidtube RH

Start Date: 8/03/10

Required Date: 8/12/10

Start Qty: 1.00

Required Qty: 1.00

D3493-1

Manufactured No

250

Each

55.0000

2

Washer

Location

Loc Qty

Loc Code

ST065

55

59127

25

60873

30

D3532-1

Manufactured No

250

Each

33.0000

2

Spacer

Location

Loc Qty

Loc Code

ST068

33

59426

11

60510

22

D3672-13

Purchased No

250

Each

844.0000

2

Phenolic Washer

Location

Loc Qty

Loc Code

ST077

844

54363

844

MS21083C8

Purchased No

250

Each

58.0000

1

NUT

Location

Loc Qty

Loc Code

ST303

58

113845

7

114934

51

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Page 10

August 3, 2010 2:57:18 PM

Work Order ID: 60989

Parent Item: D350-636-012

Parent Item Name: Skidtube RH

Start Date: 8/03/10

Required Date: 8/12/10

Start Qty: 1.00

Required Qty: 1.00

D2600-3-BENT

Manufactured No

110 Each

16.0000

1 1



Extrusion Bent

Location

Loc Qty

Loc Code

LG

59410

16

16

110 Each

38.0000

1 1

D2744

Manufactured No



Cap

Location

Loc Qty

Loc Code

LG

38

51922

2

59198

36

160 Each

1.0000

1 1

D2739

Manufactured No



350 I Beam

Location

Loc Qty

Loc Code

LG

B61257

1

1

160 Each

299.0000

8 8

D2743

Manufactured No



Crossbolt Spacer

Location

Loc Qty

Loc Code

LG

299

50281

10

57953

2

59111

287

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Page 10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Page 11

August 3, 2010 2:57:18 PM

Work Order ID: 60989

Parent Item: D350-636-012

Parent Item Name: Skidtube RH

Start Date: 8/03/10

Required Date: 8/12/10

Start Qty: 1.00

Required Qty: 1.00

D3490-3 Manufactured No 160 Each 54.0000 4 4



Cross Bolt Spacer

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG	54	
59229	14	
60294	40	

2
2

BE 10/08/12

D3490-1 Manufactured No 160 Each 19.0000 4 4



Cross Bolt Spacer

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG	19	
59424	19	

4

BE 10/08/12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

QTY -041	QTY -042	QTY -043	QTY -044	PART NUMBER	DESCRIPTION
X				D2750-041	350 SKIDTUBE ASSEMBLY, LH
	X			D2750-042	350 SKIDTUBE ASSEMBLY, RH
		X		D2750-043	350 SKIDTUBE ASSEMBLY, LH
			X	D2750-044	350 SKIDTUBE ASSEMBLY, RH
1	1	1	1	D2739	WEB
8	8	8	8	D2743	SPACER
1	1	1	1	D2744	CAP
8	8	8	8	D2745	BUSHING
1				D2750-1	SKIDTUBE WELDMENT, LH
	1			D2750-2	SKIDTUBE WELDMENT, RH
		1		D2750-3	SKIDTUBE WELDMENT, LH
			1	D2750-4	SKIDTUBE WELDMENT, RH
1		1		D3488-041	BLADE FITTING, LH
	1			D3488-042	BLADE FITTING, RH
4	4	4	4	D3490-1	SPACER
4	4			D3490-3	SPACER
		4	4	D3490-5	SPACER
8	8	8	8	D3492-041	PLUG ASSEMBLY
8	8			D3492-043	PLUG ASSEMBLY
		8	8	D3492-045	PLUG ASSEMBLY
1	1	1	1	D3535-25	WEARSHOE
1	1	1	1	D3536-25	GASKET
3	3	3	3	D3537-1	WEARPAD
8	8	8	8	D3631-1	WASHER
1	1	1	1	D3791-1	WEARPLATE
1	1	1	1	D3793-1	WEARSHOE
1	1	1	1	D3793-3	WEARSHOE
1	1	1	1	D3794-1	GASKET
1	1	1	1	D3794-3	GASKET
38	38	38	38	ALS4-1032-225	INSERT (OR ALS7-1032-225, AKS4-1032-225, AELS-1032-225)
34	34	34	34	AN3C5A	BOLT
4	4	4	4	AN3C6A	BOLT
4	4	4	4	AN6C44A	BOLT
1	1	1	1	AN8C35A	BOLT
38	38	38	38	AN960C10L	WASHER
1	1	1	1	AN960C816L	WASHER
4	4	4	4	MS21043-6	NUT
1	1	1	1	MS21083C8	NUT
4	4	4	4	NAS1515H3L	WASHER

GENERAL NOTES:

- MATERIAL: MAKE D2750-1/-2/-3/-4 FROM D2600-3 EXTRUSION (INITIAL LENGTH = 120.0).
- FINISH:
ACID ETCH, ALONDE ASSEMBLY PER DART QSI 005 4.1 PRIOR TO INSTALLING D2739 WEB.
POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
- TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED
- BREAK SHARP EDGES: N/A
- IDENTIFICATION: N/A
- WEIGHT: D2750-041/-042/-043/-044 = 26.5 LBS
- WELD PER DART QSI 004
- INSTALL ALS4-1032-225 INSERTS AFTER FINISH AS INDICATED. DRILL 'F' SIZE HOLES ($\phi 0.297$) FOR WEARSHOE INSERTS
- FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
MINIMUM YIELD TENSILE STRENGTH = 35 KSI
MINIMUM ULTIMATE TENSILE STRENGTH = 38 KSI
- SPRAY INSIDE OF TUBE WITH A COAT OF LPS LABORATORIES "LPS-3" AFTER FINISH AND AFTER INSTALLATION OF INSERTS.
COAT ALL EXPOSED FASTENERS WITH LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS OFF
POWDER COATING WITH MEK DEGREASER.
- SPACER AND PLUG INSTALLED SAME AS SECTION AJ-AJ EXCEPT HORIZONTAL
- SPACER AND PLUG INSTALLED SAME AS SECTION AP-AP EXCEPT HORIZONTAL

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER NO. *68989*
B710 B-03

RELEASED
68-09-22

F	INCORPORATE DSI 9413; QTY (3) D3537-1 WAS QTY (5) (ZN C8-1); D3791-1/3 REPLACES D3535-13/35 (ZN C8-1); D3794-1/3 REPLACES D3536-13/35 (ZN B8-1); ADD D3791-1 (ZN C8-1); WEARSHOE HOLES UNDER FWD/AFT SADDLE REMOVED (8 PL). WEARSHOE HARDWARE QTY UPDATED (ZN B8-1); D3488-041/-042 HARDWARE UPDATED (ZN C1-8, 9, 10, 11); ADD NOTE 12 AND 13 (ZN A6-1); REASON: REF. NCR 08-043	PH	08.07.16
E	CHANGE TO STAINLESS STEEL WEARPLATES; ADD RUBBER GASKETS, CHANGE INSERTS; ADD D3631-1; REMOVE QTY (38) NAS1515H3L; REMOVE QTY (10) NAS1515HBL; REMOVE D2741, QTY (2) AN960C816; REMOVE QTY (2) MS21083C8	CB	07.05.17
D	ADD HOLES AND SPACERS FOR APICAL FLOATS; INCORPORATE DEO 9133/9157	PH	06.01.05
C	ADD D2750-3/D2750-4, INCORPORATE D2738 AND D2740	CP	98.11.18
B	CHANGE MS24694-S293 TO AN8-16A	CP	98.09.01
A	NEW ISSUE	DS	98.04.16
REV	DESCRIPTION	BY	DATE
DESIGN	<i>PC</i>		
DRAWN	<i>REH</i>		
CHECKED	<i>AS</i>		
MFG. APPR.	<i>AS</i>		
APPROVED	<i>AS</i>		
DE APPR.	<i>AS</i>		
DATE	08.07.16		

DART AEROSPACE USA, INC. PORT HADLOCK, WA	
DRAWING NO. D2750	REV. F SHEET 1 OF 11
TITLE 350 SKIDTUBE ASSEMBLY	SCALE NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

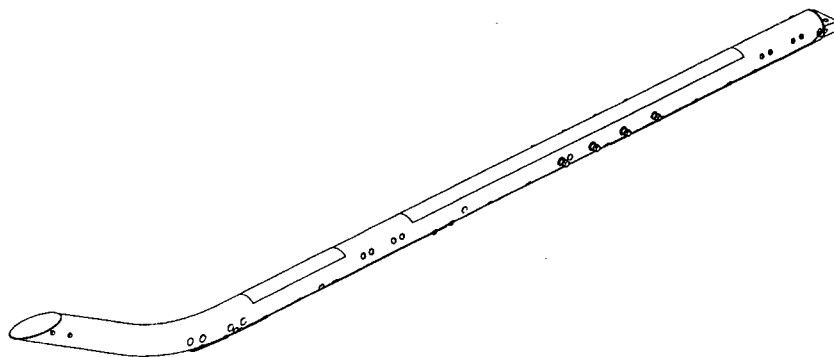
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

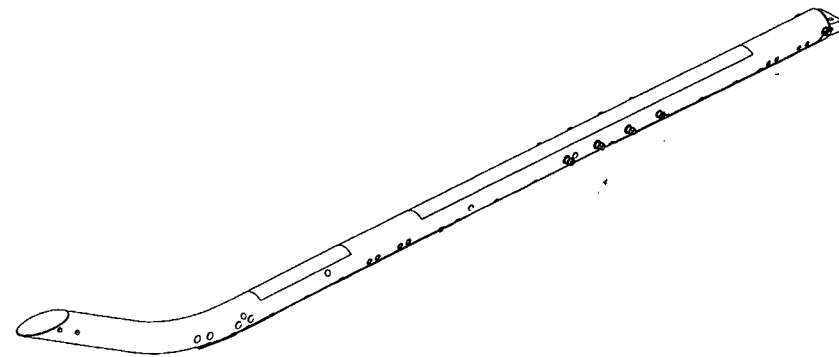
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O 60889



D2750-041 350 SKIDTUBE ASSEMBLY, LH



D2750-042 350 SKIDTUBE ASSEMBLY, RH

RELEASED
08-09-22

DESIGN	PC	DART AEROSPACE USA, INC.	
DRAWN	AM	PORT HADLOCK, WA	
CHECKED	AM	DRAWING NO.	REV. F
MFG. APPR.	AM	D2750	SHEET 2 OF 11
APPROVED	AM	TITLE	SCALE
DE APPR.	AM	350 SKIDTUBE ASSEMBLY	NTS
DATE	08.07.16	COPYRIGHT © 1998 BY DART AEROSPACE USA, INC. <small>THIS DOCUMENT IS PRELIMINARY AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.</small>	

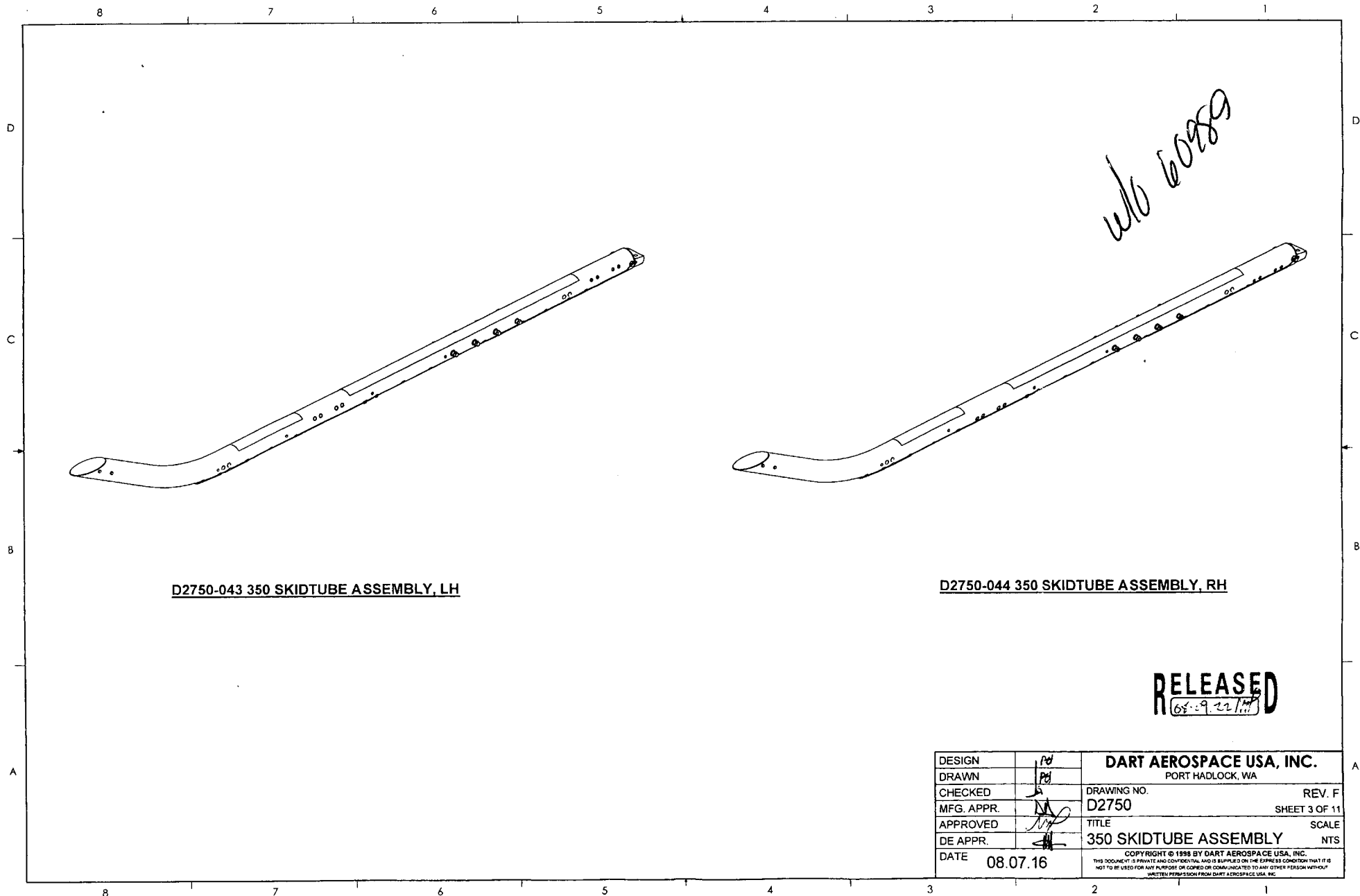
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



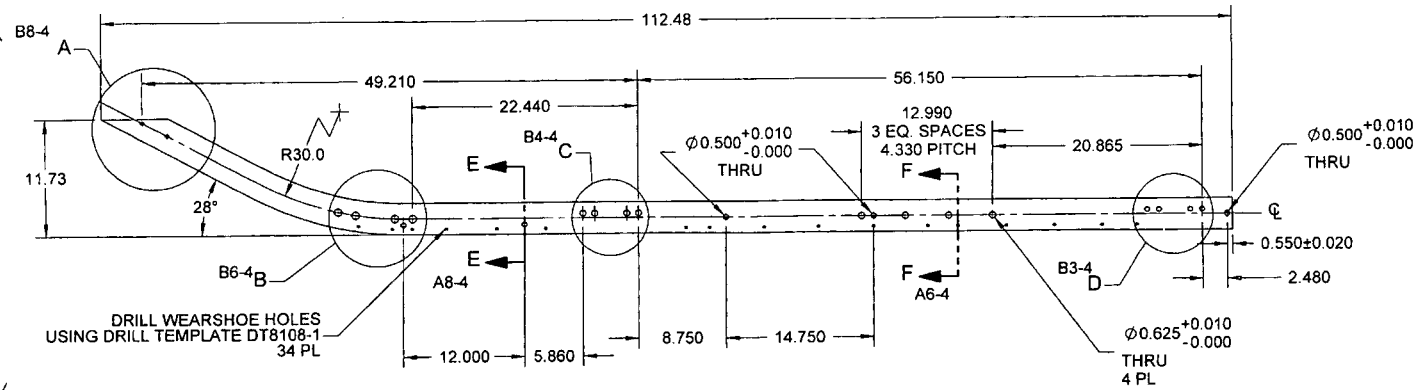
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

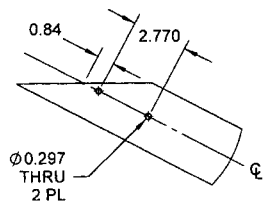
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

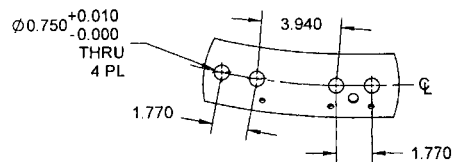


D2750-1 LH SKIDTUBE

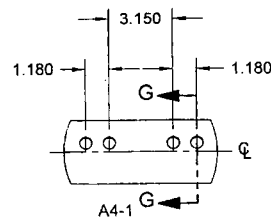
WLB 10589



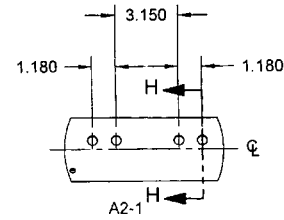
DETAIL A
SCALE 2X



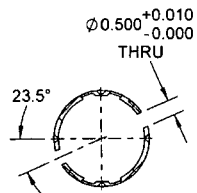
DETAIL B
SCALE 2X



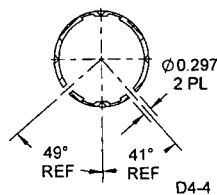
DETAIL C
SCALE 2X



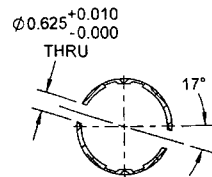
DETAIL D
SCALE 2X



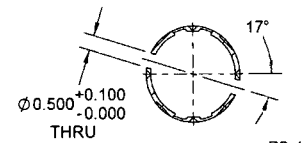
SECTION E-E
SCALE 3X, 2 PL



SECTION F-F
SCALE 3X, 17 PL



SECTION G-G
SCALE 3X, 4 PL



SECTION H-H
SCALE 3X, 4 PL

RELEASED

DESIGN		DART AEROSPACE USA, INC.	
DRAWN		PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2750	SHEET 4 OF 11
APPROVED		TITLE	SCALE
DE APPR.		350 SKIDTUBE ASSEMBLY	NTS
DATE	08.07.16	<small>COPYRIGHT © 1988 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.</small>	

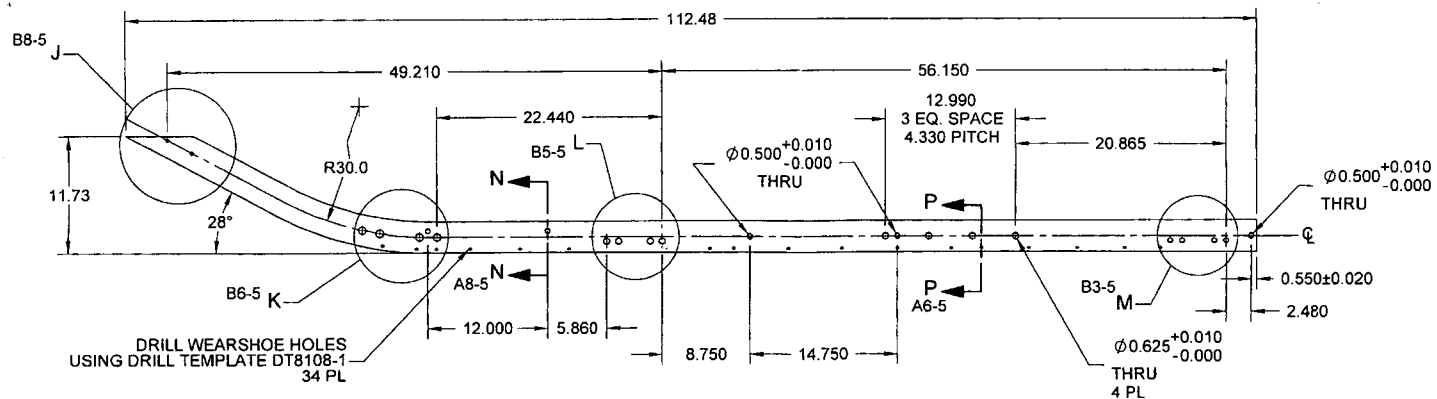
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

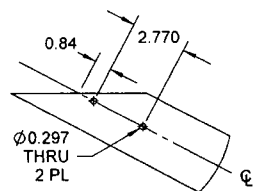
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

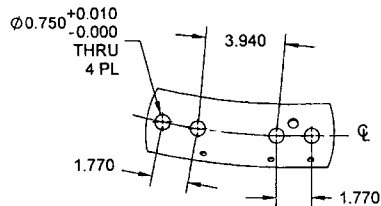
NOTE: Date & initial all entries



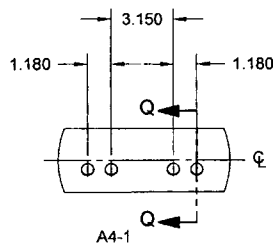
D2750-2 RH SKIDTUBE



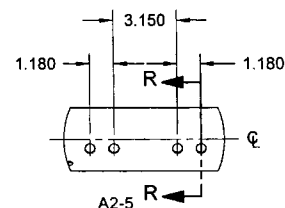
DETAIL J
SCALE 2X



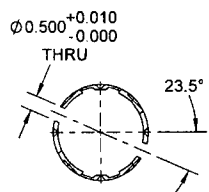
DETAIL K
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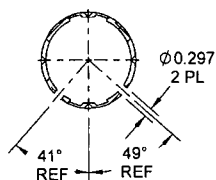
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SCALE 2X



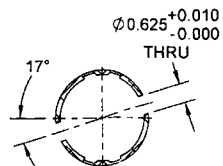
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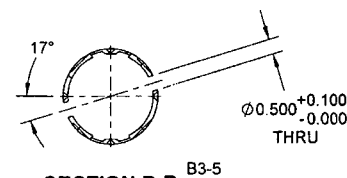
SECTION N-N
SCALE 3X, 2 PL



SECTION P-P
SCALE 3X, 17 PL



SECTION Q-Q
SCALE 3X, 4 PL



SECTION R-R
SCALE 3X, 4 PL

RELEASED

DESIGN	REV	DART AEROSPACE USA, INC.	
DRAWN	REV	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2750	SHEET 5 OF 11
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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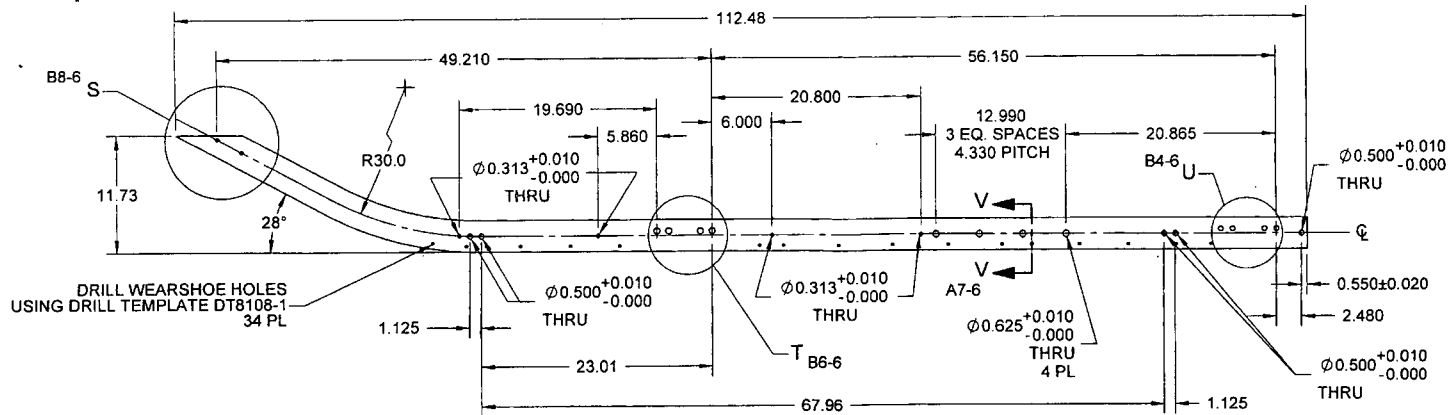
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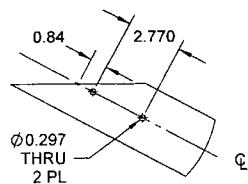
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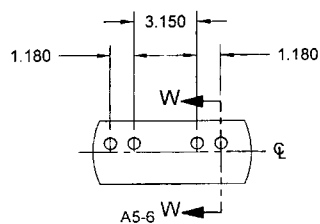
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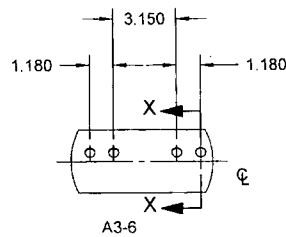
D2750-3 LH SKIDTUBE



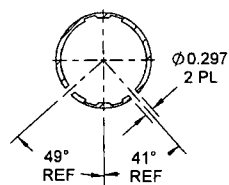
DETAIL S
D8-6
SCALE 2X



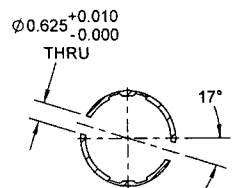
DETAIL T
C5-6
SCALE 2X



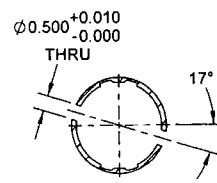
DETAIL U
D3-6
SCALE 2X



SECTION V-V
C4-6
SCALE 3X, 17 PL



SECTION W-W
B6-6
SCALE 3X, 4 PL



SECTION X-X
B4-6
SCALE 3X, 4 PL

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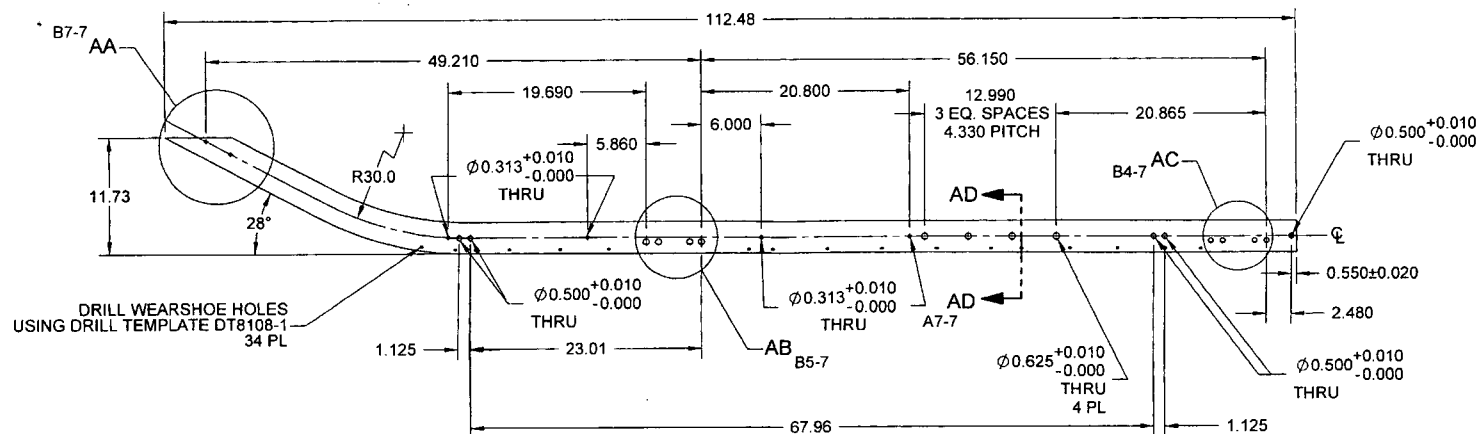
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

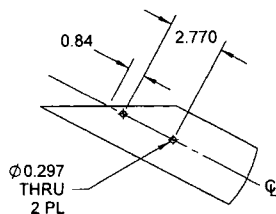
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

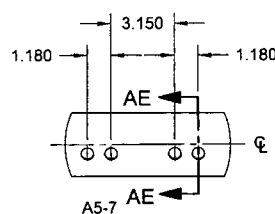
NOTE: Date & initial all entries



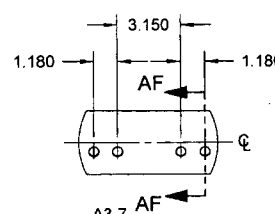
D2750-4 RH SKIDTUBE



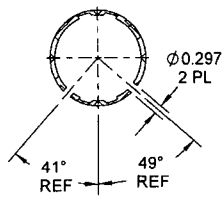
DETAIL AA
SCALE 2X



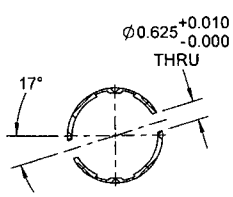
DETAIL AB
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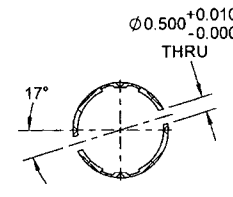
DETAIL AC
SCALE 2X



SECTION AD-AD
SCALE 3X, 17 PL









SECTION AE-AE
SCALE 3X, 4 PL



SECTION AF-AF
SCALE 3X, 4 PL

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DESIGN		DART AEROSPACE USA, INC.	
DRAWN		PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2750	SHEET 7 OF 11
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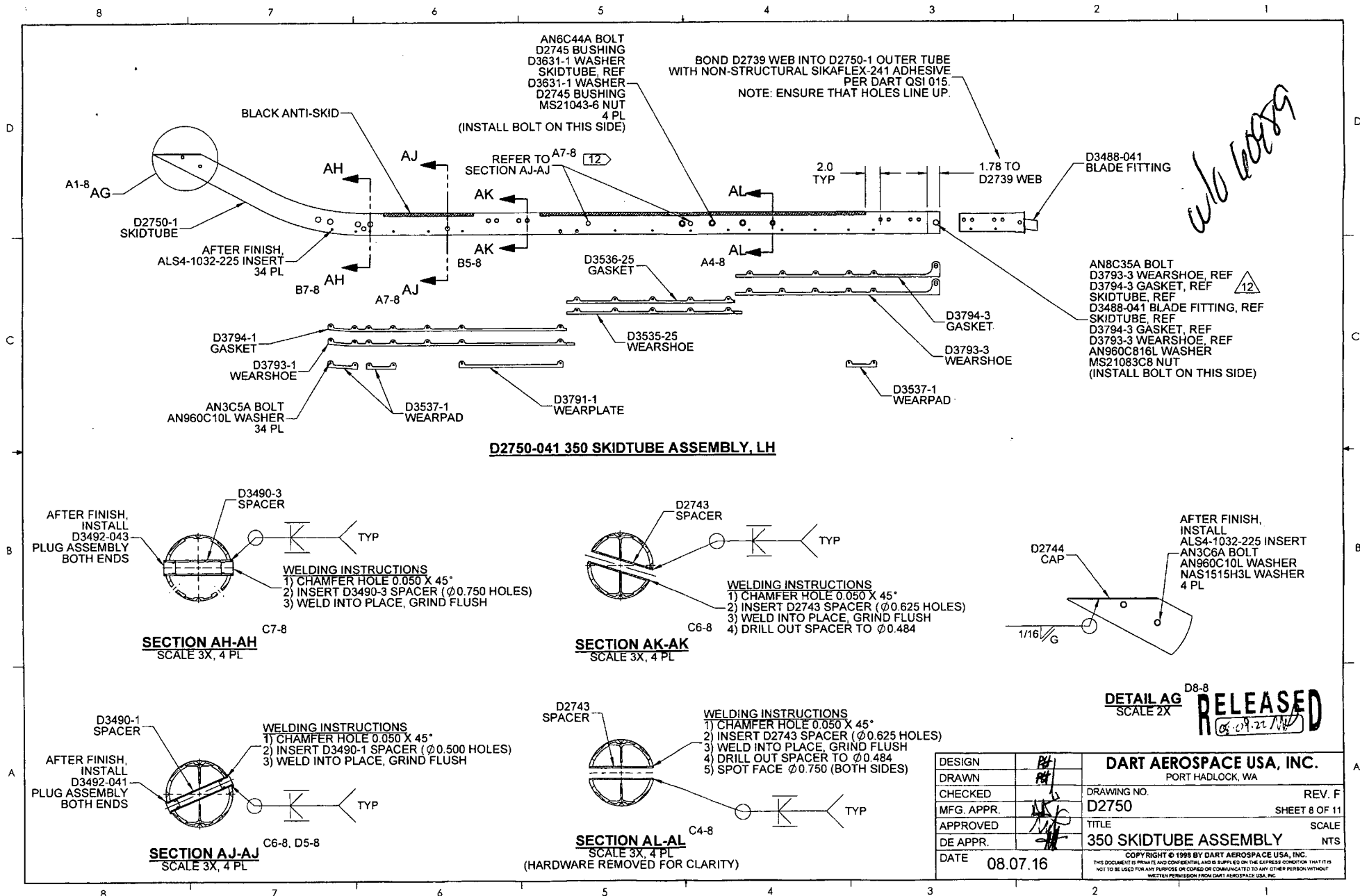
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NOTE: Date & initial all entries



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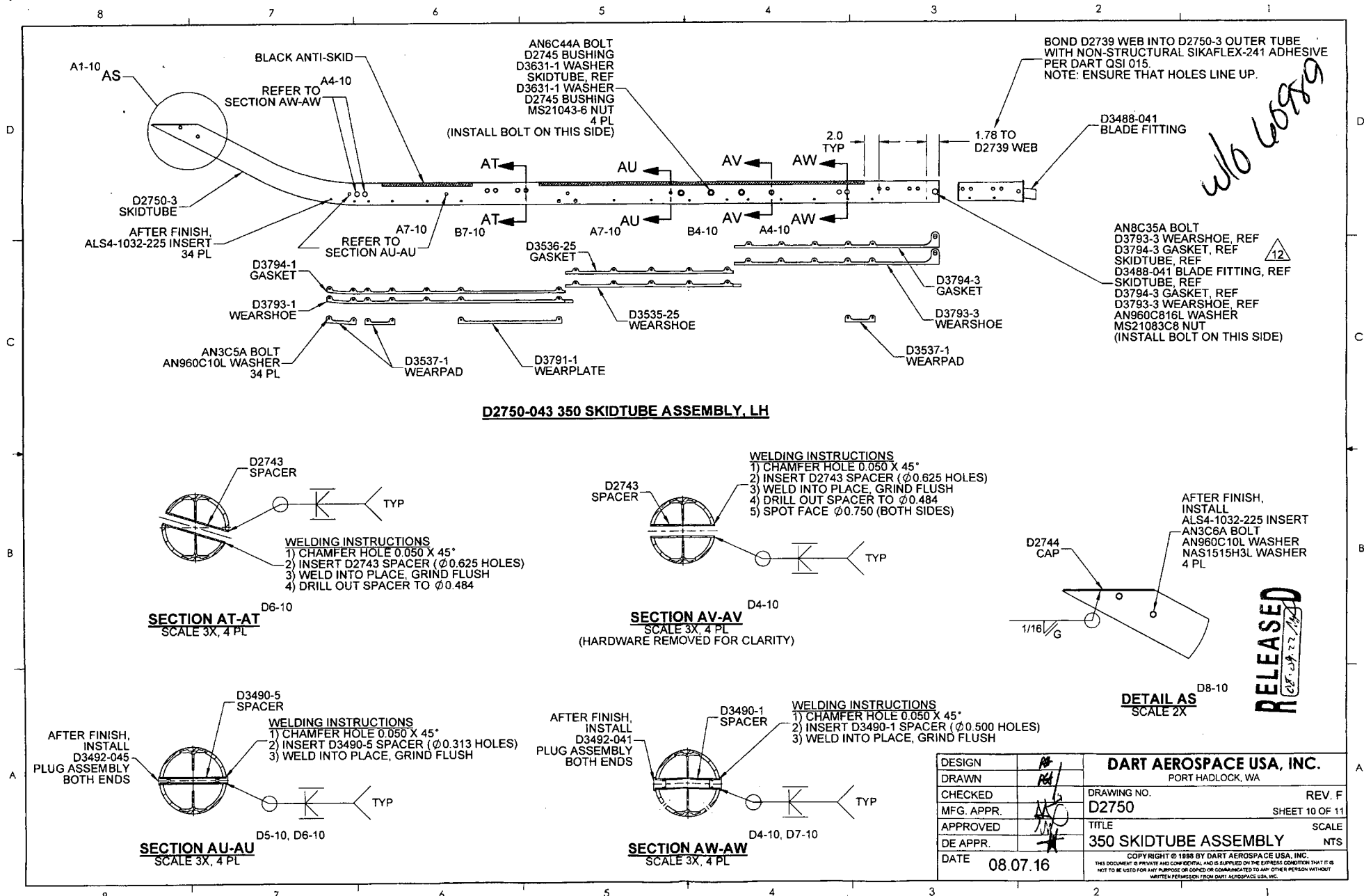
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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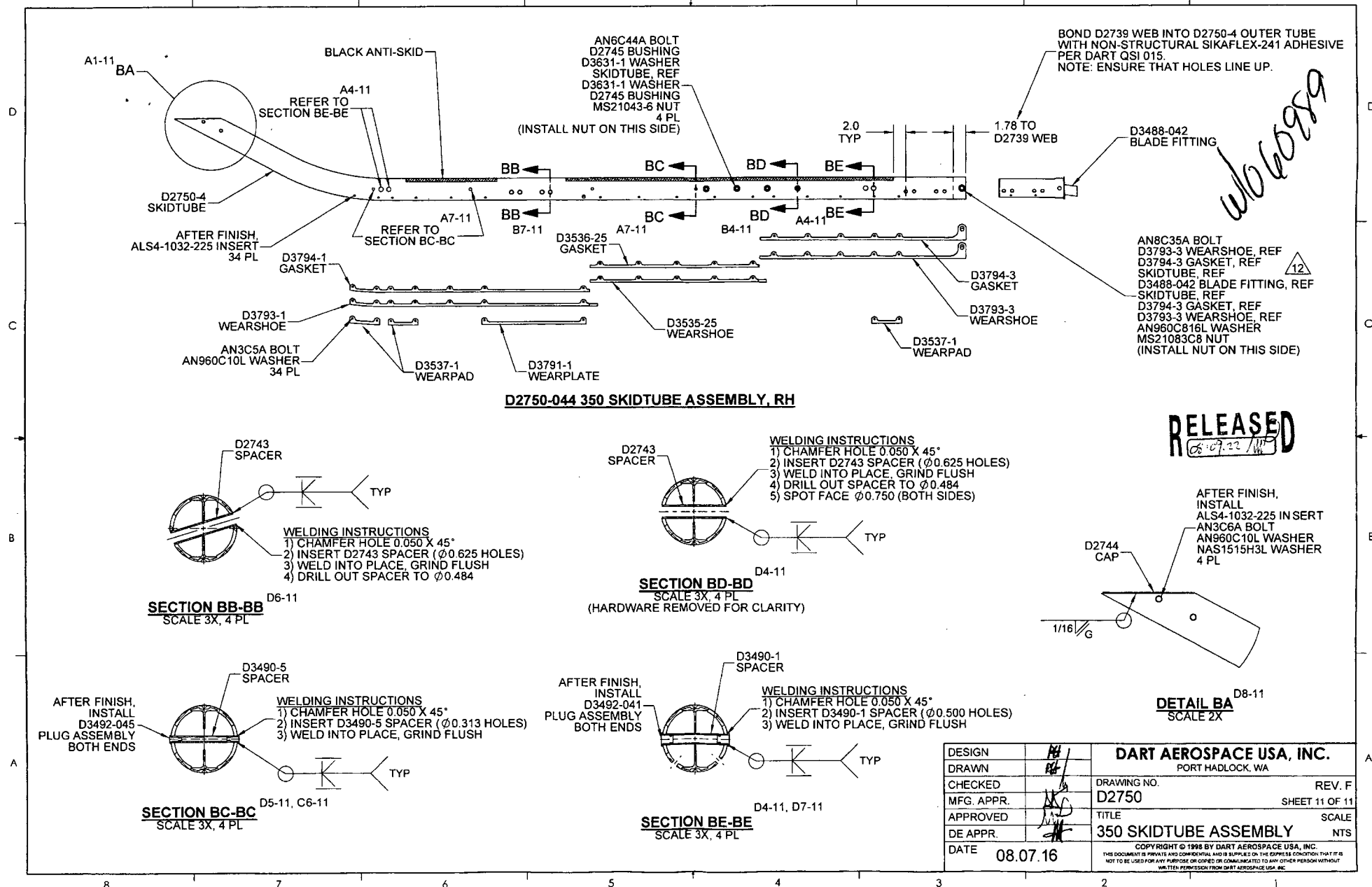
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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

60989

DART AEROSPACE LTD		Work Order: 60157
Description: 350 shot tube / revised Jig DT8150 + Process		Part Number: D350-636-012
Inspection Dwg: D2250 Rev: F		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
112.48	± 0.030	112.43	✓			6
56.150	± 0.010	56.150	✓			checks with
49.210	± 0.010	49.210	✓			ED 4
20.865	± 0.010	20.865	✓			+ ED-14
12.990	± 0.010	12.990	✓			
4.330	± 0.010	4.330	✓			
4.330	± 0.010	4.330	✓			
4.330	± 0.010	4.330	✓			
22.440	± 0.010	22.440	✓			
0.500	± 0.010	0.500	✓			
0.500	± 0.010	0.500	✓			
<u>Detail L</u>						
3.150	± 0.010	3.150	✓			
1.180	± 0.010	1.180	✓			
1.180	± 0.010	1.180	✓			
<u>Section A-A</u>						
17°	$\pm 1/2^\circ$	16.5°	✓			
0.550	± 0.020	0.550	✓			
2.480	± 0.010	2.480	✓			
<u>Section P-P</u>						
41°	$\pm 1/2^\circ$	41°	✓			
49°	$\pm 1/2^\circ$	49°	✓			49-01

Measured by: <u>DP</u>	Audited by: <u>8</u>	Prototype Approval:	N/A
Date: <u>10-8-3</u>	Date: <u>10/06/12</u>	Date:	N/A

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	

DART AEROSPACE LTD		Work Order: 60989
Description:		Part Number:
Inspection Dwg:	Rev:	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
14.750	+/- 0.010	14.750	-			
8.750	+/- 0.010	8.750	-			
5.860	+/- 0.010	5.860	-			
12.000	+/- 0.010	12.000	-			
<u>Section N-N</u>						
23.5°	+/- 1/2°	24°	-			
<u>Detail K</u>						
3.940	+/- 0.010	3.940	-			
1.770	+/- 0.010	1.770	-			
1.770	+/- 0.010	1.770	-			
28°	+/- 1/2°	29°	-			
<u>Detail J</u>						
0.84	+/- 0.030	0.780	-			
2.770	+/- 0.010	2.770	-			
<u>Detail M</u>						
3.150	+/- 0.010	3.150	-			
1.180	+/- 0.010	1.180	-			
1.180	+/- 0.010	1.180	-			

Measured by: DP	Audited by: S	Prototype Approval:	N/A
Date: 10-8-3	Date: 10/05/12	Date:	N/A

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	

NO. 234

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: 59818
Part number: D350-626-011
Description: 320 skid tube
Welding Process: Tig[☒] Mig[]
Base material: Aluminium
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier P. D. A. Date of Test Coupon 10-06-21
Welder Barclay Elliott Date of Test Coupon 10-06-21

The above named individual is qualified in accordance with AWS D17.1.2001 to weld